

What is claimed is:

- 1           1.     A tissue culture system comprising:  
2                 (a)     at least one isolated neural cell expressing at least one LPA  
3     receptor;  
4                 (b)     a lysophosphatidic acid (LPA) compound; and  
5                 (c)     a basal culture medium.
- 1           2.     The tissue culture system of claim 1, wherein the form of said LPA  
2     compound is selected from the group consisting of LPA 20:5, 18:1 (oleoyl), 16:0  
3     (palmitoyl), and 14:0 (myristoyl).
- 1           3.     The tissue culture system of claim 2, wherein the form of said LPA  
2     compound is 18:1 (oleoyl) or 16:0 (palmitoyl).
- 1           4.     The tissue culture system of claim 1, wherein said isolated neural cell is a  
2     stem/progenitor cell.
- 1           5.     The tissue culture system of claim 4, wherein said neural stem/progenitor  
2     cell is situated within a neurosphere.
- 1           6.     The tissue culture system of claim 4, wherein said neural stem/progenitor  
2     cell is derived from a mammal.
- 1           7.     The tissue culture system of claim 6, wherein said mammal is a mouse.
- 1           8.     The tissue culture system of claim 6, wherein said mammal is a human.
- 1           9.     The tissue culture system of claim 1, wherein said LPA receptor expressed  
2     by said neural cell is selected from the group consisting of an LPA1, LPA2, and LPA3  
3     receptor.

1           10.     The tissue culture system of claim 1, wherein said stem/progenitor cell  
2 expresses at least one of a Sca-1 and an AC133 antigen, and at least one of an LPA1,  
3 LPA2 and LPA3 receptor.

1           11.     The tissue culture system of claim 10, wherein said stem/progenitor cell  
2 further expresses at least one marker of neuronal differentiation selected from the group  
3 consisting of  $\beta$ III tubulin, and nestin.

1           12.     A method of culturing at least one neurosphere from isolated brain cells,  
2 the method comprising the steps of:

3                   (a)     providing at least one isolated brain cell; and

4                   (b)     culturing said at least one brain cell in a medium containing a  
5 lysophosphatidic acid (LPA) compound under conditions that allow for growth and  
6 differentiation of a neurosphere from said isolated brain cell.

1           13.     The method of claim 12, wherein the step (b) of culturing the at least one  
2 brain cell under conditions that allow for growth of a neurosphere further allows for  
3 proliferation and differentiation of the cells within said neurosphere into at least one cell  
4 type selected from the group consisting of a neuron, an astrocyte and an oligodendrocyte.

1           14.     The method of claim 13, wherein said at least one cell type is a neuron,  
2 wherein at least one lineage-specific marker is expressed by said cell, said marker  
3 selected from the group consisting of  $\beta$ III tubulin and nestin.

1           15.     An isolated neural cell cultivated in a basal culture medium comprising a  
2 lysophosphatidic acid (LPA) compound.

1           16.     The isolated neural cell of claim 15, wherein said cell is a stem/progenitor  
2 cell.

1           17.    The isolated neural cell of claim 15, wherein the form of said LPA  
2    compound is selected from the group consisting of LPA 20:5, 18:1 (oleoyl), 16:0  
3    (palmitoyl), and 14:0 (myristoyl).

1           18.    The isolated neural cell of claim 17, wherein the form of said LPA  
2    compound is LPA 18:1 (oleoyl) or LPA 16:0 (palmitoyl).